

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In the divisional application of ) Examiner of Parent Application:  
R. Hamilton et al. ) L. Thanh  
)  
For: **CATHETER HAVING A SOFT ) Group Art Unit: 3763**  
DISTAL TIP )  
)  
Serial No.: Unassigned ) **PRELIMINARY AMENDMENT**  
)  
Filed: November 19, 2001 ) **CUSTOMER NO. 23,422**  
)  
Docket No.: 0009600-6471 )

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Mailed in San Francisco, CA on November 19, 2001

The Assistant Commissioner for Patents  
U.S. Patent and Trademark Office  
Washington, DC 20231

Dear Sir:

Please preliminarily amend this application as indicated below.

**IN THE SPECIFICATION**

On page 1, after the title and before "BACKGROUND OF THE INVENTION"  
insert the following new paragraph:

**--RELATED APPLICATIONS**

This application is a divisional application of application Serial Number  
09/471,053, filed on December 21, 1999, which is incorporated herein in its entirety.—

**IN THE DRAWINGS:**

**In Fig. 4, add reference numeral 34 as indicated in red on the attached  
photostatic copy of the drawing.**

Add new Fig. 8.

**IN THE SPECIFICATION**

Please insert between the paragraph ending on page 5, line 15 and the **DETAILED DESCRIPTION OF THE INVENTION**, the following new paragraph:

--FIG. 8 is an enlarged, longitudinal cross sectional view of an alternate embodiment of the catheter of the invention, having an outer sleeve secured to the proximal end of the distal tip member and the distal end of the catheter shaft.--

**Please rewrite the paragraph starting on page 5, line 18 and continuing to page 6, line 8, to read as follows:**

Fig. 1 illustrates a balloon catheter 10 embodying features of the invention, comprising an elongated catheter shaft 11 having a proximal shaft section 12 and a distal shaft section 13, a tip member 14, an inflatable balloon 15 on the distal catheter shaft section 13 having an interior 16, and an adapter 17 on the proximal catheter shaft section 12. In the embodiment illustrated in Fig. 1, the catheter shaft 11 comprises an outer tubular member 18 having an inflation lumen 19, and an inner tubular member 21 having a guidewire receiving lumen 22 disposed within the outer tubular member 18. Guidewire 23, illustrated in Fig. 1 within guidewire receiving lumen 22, extends to port 24 in the distal end of the tip member 14. Balloon 15 has a working section 25, a proximal shaft section 26 disposed about and secured to a distal portion of the outer tubular member 18, and a distal shaft section 27.

**Please rewrite the paragraph starting on page 6, line 9 and continuing to page 7, line 2, to read as follows:**

--As best illustrated in Fig. 2, showing an enlarged longitudinal cross sectional view of a distal section of the catheter 10 shown in Fig. 1 taken along lines 2-2, the proximal end of the tip member 14 is spaced distally apart from the distal end of the inner tubular member 21, and thus is not in contact therewith. In the embodiment illustrated in Fig. 2, the distal end of the inner tubular member 21 is disposed distally of the inflatable interior 16 of the balloon. The balloon distal shaft section 27 is disposed about a distal portion of the inner tubular member 21 and a proximal portion of the tip member 14. In a presently preferred embodiment, the balloon distal shaft section 27 is secured to both the distal portion of the inner tubular member 21 and the proximal portion of the tip member 14, as for example, by fusion bonding. It would be obvious to one of ordinary skill in the art that a sheath 40 located distally adjacent to the distal end of the balloon distal shaft section 27 could be disposed about and secured to the inner tubular member 21 or tip member 14 in place of the distal end of the balloon distal shaft section 27.--

**Please rewrite the paragraph starting on page 9, line 21, and continuing to page 10, line 15, to read as follows:**

--The space is sufficiently long so that the polymeric materials forming the inner tubular member 21 and tip member 14 do not flow into contact with one another during fusion bonding of the balloon distal shaft section 27 thereto. The length of the space (i.e., the length of gap 31, or portion 32, or intermediate member 41) between the distal end of the inner tubular member 21 and the proximal end of the tip member 14 may vary depending on the desired catheter performance, the length of the balloon distal

shaft section 27 and tip member 14, and the method used to bond to tip member. The length of the space is typically about 0.05 mm to about 0.75 mm, preferably about 0.05 mm to about 0.5 mm, more preferably about 0.05 to about 0.5 mm and most preferably about 0.1 mm to about 0.3 mm. In a presently preferred embodiment, the balloon distal shaft section 27 is about 1 to about 3 mm, preferably about 1.8 to about 2.2 mm. The tip member 14 is typically about 1 to about 5 mm, preferably about 2 to about 3 mm. In the embodiment illustrated in Figs. 2, 6 and 7, the tip member 14 proximal end is distal to the longitudinal center of the balloon distal shaft section 27. However, in alternative embodiments, the tip member 14 proximal end may be located in various other locations along the length of the balloon distal shaft section 27 (not shown).

### **IN THE CLAIMS**

**Please cancel claims 1-19 without prejudice.**

**Please add the following new claims:**

22. (New) A balloon catheter, comprising:

a) an elongated catheter shaft having a proximal end, a distal end,

and an inflation lumen;

b) a balloon on a distal catheter shaft section, having an inflatable

interior which is in fluid communication with the inflation lumen; and

c) a tip member on a distal end of the catheter having a proximal end

and a distal end and disposed distal to the distal end of the elongated catheter shaft;

and

d. a sheath disposed about and secured to the proximal end of the tip member and the distal end of the catheter shaft.

23. The balloon catheter of claim 22 wherein the balloon includes a distal shaft section disposed about and secured to the distal end of the catheter shaft.

24. The balloon catheter of claim 22 wherein the balloon includes a distal shaft section secured to the inner tubular member.

25. A balloon catheter, comprising

a) an elongated catheter shaft having an outer tubular member, and an inner tubular member with a guidewire lumen and a distal end and being disposed in at least a part of the outer tubular member and defining an inflation lumen with the outer tubular member;

b) a balloon on a distal catheter shaft section having an interior in fluid communication with the inflation lumen; and

c) a tubular tip member disposed distal to the distal end of the inner tubular member; and

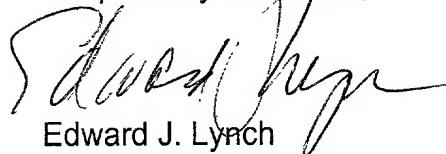
d) a tubular sheath disposed about and secured to a proximal portion of the tubular tip member and the distal end of the inner tubular member.

#### REMARKS

The Applicants believe that the pending claims are directed to patentable subject matter. Consideration and an early allowance thereof are earnestly solicited. A marked up copy of the amendments made to the specification are set forth in the

attached sheet. Applicant's have also concurrently filed formal drawings incorporating the amendments to the drawings referenced above.

Respectfully submitted,



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**MARKED-UP COPY OF AMENDMENTS TO SPECIFICATION**

**Please rewrite the paragraph starting on page 5, line 18 and continuing to page 6, line 8, to read as follows:**

--Fig. 1 illustrates a balloon catheter 10 embodying features of the invention, comprising an elongated catheter shaft 11 having a proximal shaft section 12 and a distal shaft section 13, a tip member 14, an inflatable balloon 15 on the distal catheter shaft section 13 having an interior 16, and an adapter 17 on the proximal catheter shaft section 12. In the embodiment illustrated in Fig. 1, the catheter shaft 11 comprises an outer tubular member 18 having an inflation lumen 19, and an inner tubular member 21 having a guidewire receiving lumen 22 disposed within the [inflation lumen] outer tubular member 18. Guidewire 23, illustrated in Fig. 1 within guidewire receiving lumen 22, extends to port 24 in the distal end of the tip member 14. Balloon 15 has a working section 25, a proximal shaft section 26 disposed about and secured to a distal portion of the outer tubular member 18, and a distal shaft section 27.--

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illustrated in Fig. 2, the distal end of the inner tubular member 21 is disposed distally of the inflatable interior 16 of the balloon. The balloon distal shaft section 27 is disposed about a distal portion of the inner tubular member 21 and a proximal portion of the tip member 14. In a presently preferred embodiment, the balloon distal shaft section 27 is secured to both the [proximal] distal portion of the inner tubular member 21 and the [distal] proximal portion of the tip member 14, as for example, by fusion bonding. It would be obvious to one of ordinary skill in the art that a sheath [(not shown)] 40 located distally adjacent to the distal end of the balloon distal shaft section 27 could be disposed about and secured to the inner tubular member 21 or tip member 14 in place of the distal end of the balloon distal shaft section 27.--

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CB4056962

USPTO Patent Application  
Serial Number Unassigned  
Attorney Docket No. 0009600-6471  
Preliminary Amendment

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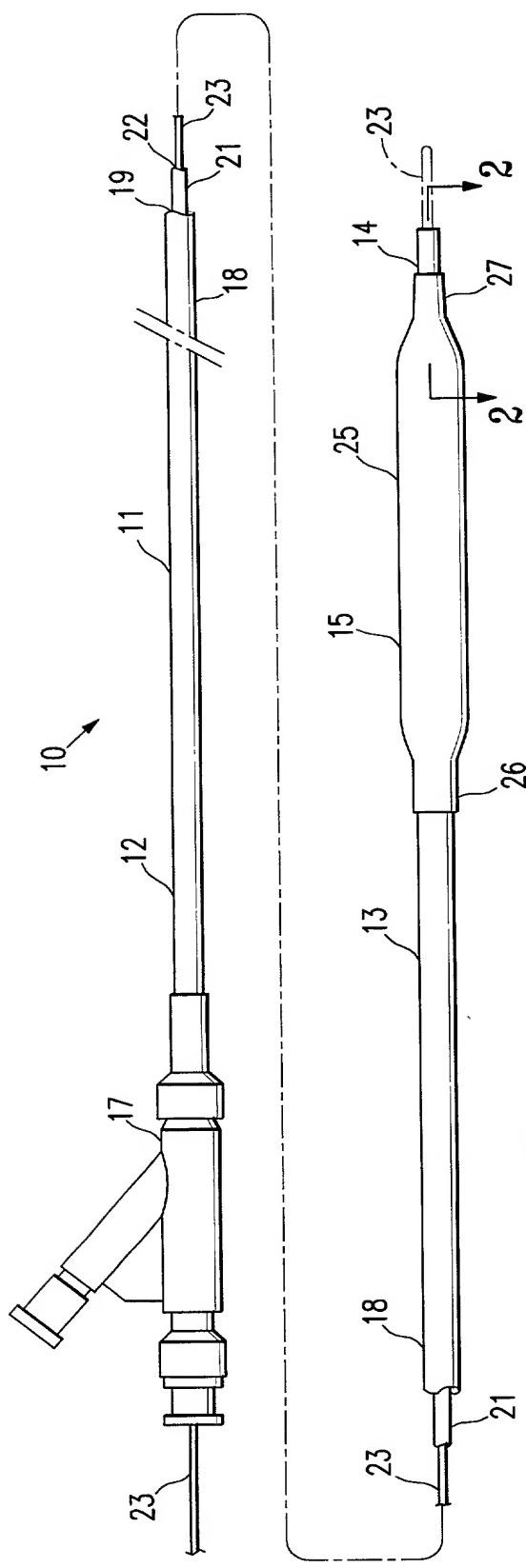


FIG. 1

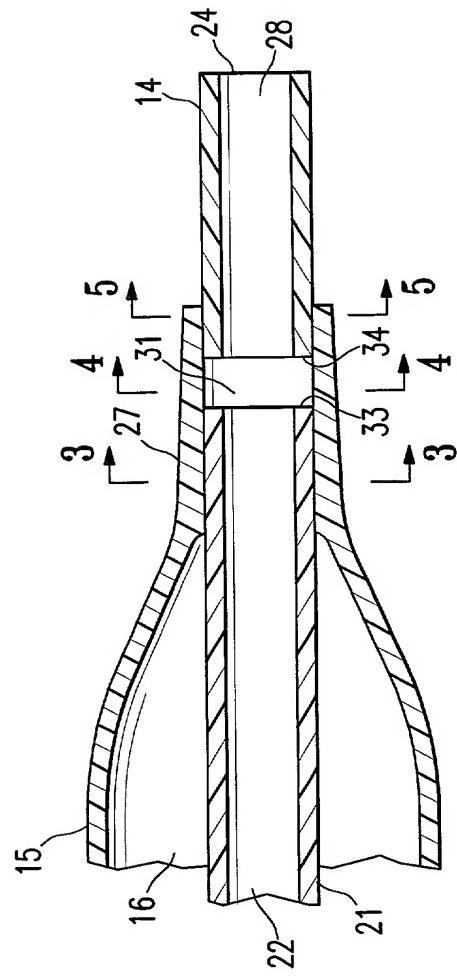


FIG. 2

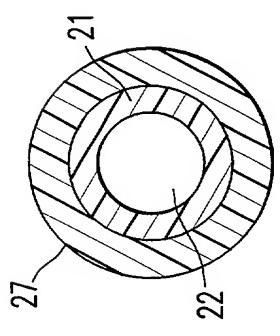


FIG. 3

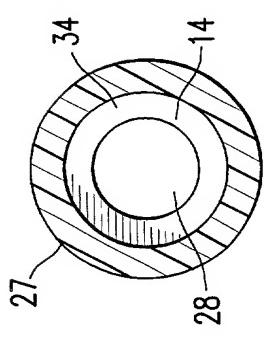


FIG. 4

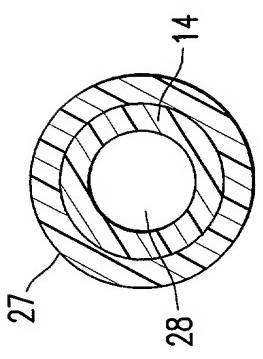


FIG. 5

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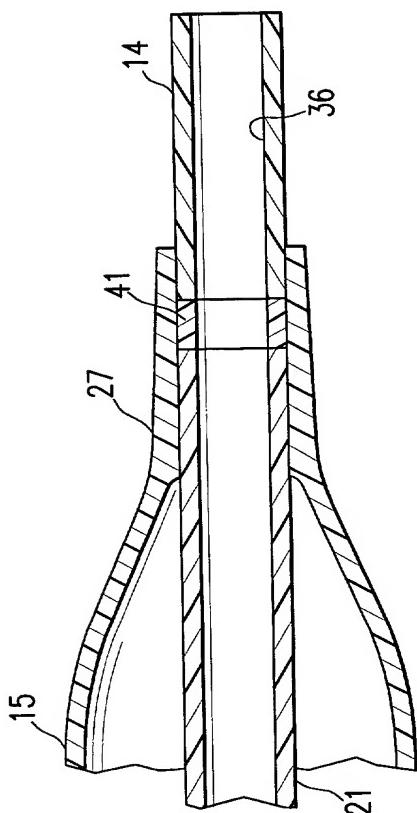


FIG. 6

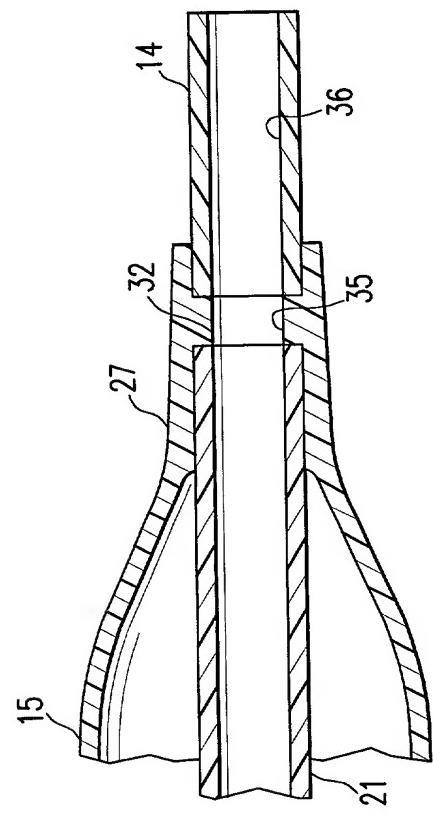


FIG. 7

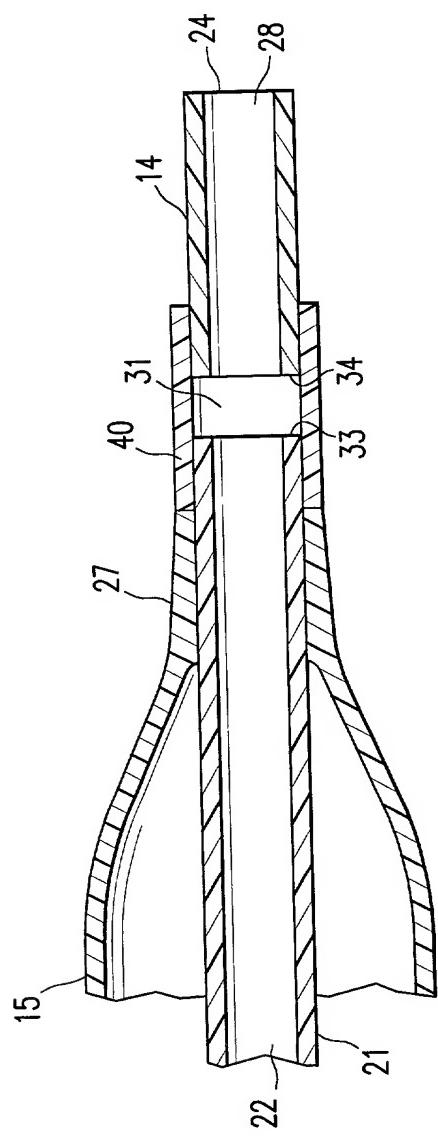


FIG. 8